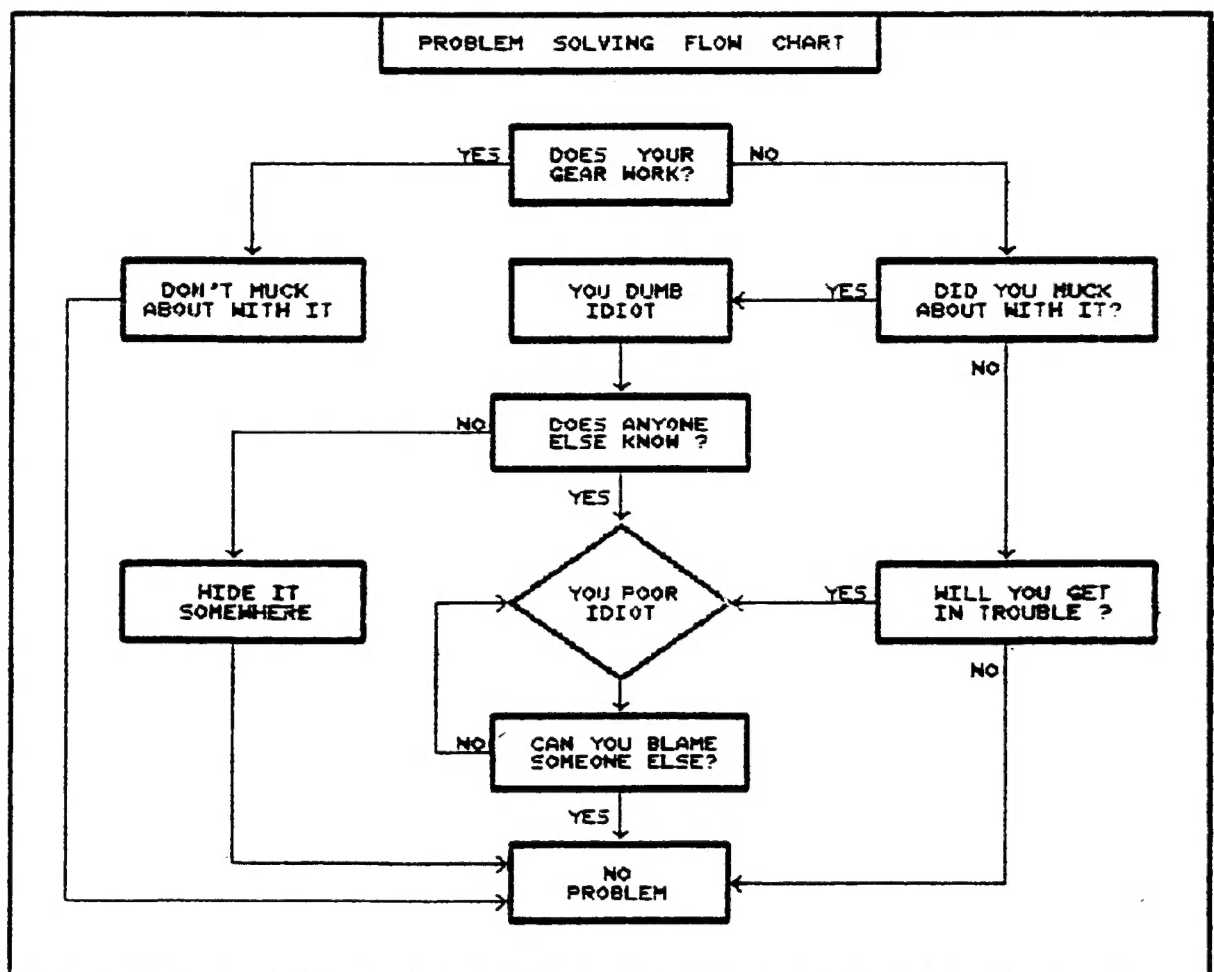


VZ 200/300

HUNTER VALLEY

VZ JOURNAL





STARTING WITH THIS ISSUE THE HARDWARE PROJECTS WILL BE DONE USING A CAD (COMPUTER AIDED DESIGN) PROGRAM ON MY IBM PC COMPATIBLE COMPUTER. IN DUE TIME I'LL BE ALSO ABLE TO PRODUCE PCB'S TO GO WITH MOST PROJECTS. SOMETIMES IT USED TO TAKE ME WEEKS TO DO IT MANUALLY USING PEN AND PAPER AND NOW IT'S SO EASY.

## FRONT COVER . . .

IF YOU HAD A MISFORTUNE WITH YOUR GEAR, WHICH ROAD DID YOU TAKE?

## VZ NEWS &amp; VIEWS . . . PAGE 3

LAST ISSUE OF LE'VZ 200/300 OOP, APOLOGIES, THANKS & A NOTE TO THE EDITOR.

## HELP - SELL &amp; TELL . . . PAGE 4

AT READERS REQUEST, THIS PAGE IS FOR THEM. SO IF YOU HAVE VZ GEAR TO SELL, NEED SOME HELP OR WOULD LIKE TO TELL OTHER READERS YOUR VIEW THEN JUST DROP THE EDITOR A LINE AND HE'LL DO HIS BEST. KEEP IT SHORT AND SWEET PLEASE.

## TANDY P/PATCH BY BRIAN GREEVE PAGES 5-7

BRIAN HAS PROVIDED US WITH ANOTHER EXCELLENT UTILITY WHICH WILL ALLOW PRINTOUT OF VZ GRAPHICS AND INVERSE CHARACTERS ON SOME DOT MATRIX PRINTERS.

## 2 DRIVE PROBLEMS BY N. HUGHES PAGES 8-10

NEVILLE HAS GONE TO A LOT OF TROUBLE TO FIND OUT WHY SOME DRIVES WORKED WITH ONE POWER SUPPLY AND WHILE OTHERS DIDN'T AND HE'S SHARING THE SOLUTION.

## LIVEN-UP ANIM. BY BOB KITCH PAGES 11-12

BOB CONCLUDES HIS ARTICLE ON LIVEN-UP ANIMATION & GRAPHICS IN HIS USUAL EASY TO FOLLOW STYLE. NOTE: THE FINAL VERSION CAN BE PURCHASED FROM BOB ANYTIME.

## LOAD-UP BY BOB KITCH PAGES 13-14

THIS IS THE SECOND PROGRAM OF THE TRILOGY BY BOB TO GET YOU NEARER COMPLETION OF THE FINAL SERIES OF PROGRAMS AND AS USUAL IS WELL DOCUMENTED.

## 32K RAM FOR VZ300 BY JOE LEON PAGES 15-16

I HAD A FEW REQUESTS FOR INTERNAL RAM FOR THE VZ300 SIMILIAR TO THE VZ200 PROJECT COUPLE ISSUES BACK AND THIS PROJECT IS THE RESULT OF THOSE REQUESTS.

## \*\* NEW \*\* VZ DISKMAG \*\* NEW \*\* PAGE 17

ONE VZ PUBLICATION HAS CEASED WHILE ANOTHER HAS JUST STARTED UP. THIS MAGAZINE IS DIFFERENT IN THAT IT IS ON DISK ONLY. THE COMPLIMENTARY COPY SENT TO THE CLUB SHOWED THAT THE AUTHOR SPENT A GREAT DEAL OF TIME ON LAYOUT AND PRESENTATION. IT'S MENU DRIVEN AND ALSO CONTAINS SOME NICE GRAPHICS.

## M/C ED/ASS &amp; MODEM SOFTWARE PAGE 18

A NEW AND FAST M/C EDITOR/ASSEMBLER AND A NEW DISK BASED VZ MODEM PROGRAM ARE AVAILABLE FROM PETER HICKMAN TOGETHER WITH DETAILS OF SIMPLE MODS TO GET IT GOING. THE MODS WILL BE PRESENTED IN NEXT ISSUE AS A FULL BLOWN PROJECT.

## VZ USER GROUPS \*\* CLUB NEWS &amp; SUBS PAGE 19

\*\* \*\* NOTE : ANNUAL GENERAL MEETING \*\* \*\*

## \*\* \*\* SOFTWARE \*\* FOR \*\* SALE \*\* \*\* PAGE 20

## PATCH3.3 \*\* EXTENDED DOS \*\* MENU/FILE COPIER

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THANK YOU JOHN D'ALTON — — —

AS MOST OF YOU MAY BE AWARE JOHN HAS JUST POSTED OUT HIS LAST ISSUE OF LE'VZ 200/300 OOP (VZ MAGAZINE) AFTER SIX YEARS OF OPERATION. ONLY ANOTHER EDITOR WOULD KNOW THE EFFORT, TIME AND DEDICATION IT TAKES TO PRODUCE ISSUE AFTER ISSUE. ON BEHALF OF MYSELF AND OTHER VZ USERS I SAY THANK YOU JOHN FOR A JOB WELL DONE AND WE WISH YOU ALL THE BEST IN YOUR FORTHCOMING OPERATION.

APOLOGIES — — —

ONCE AGAIN MY APOLOGIES FOR THE LATENESS OF THIS ISSUE FOR WHICH I APOLOGISE MOST SINCERLY. THERE ARE MANY REASONS, CONTINUING PROBLEMS FROM CAR ACCIDENT AND LOSS OF JOB WHICH HAS EFFECTED ME AS WELL AS LOSS OF MOTIVATION.

I'VE BEEN EDITING THE JOURNAL SINCE DECEMBER 1986 AND IT HAS TAKEN A GREAT DEAL OF TIME AND EFFORT, ESPECIALLY LATELY TO KEEP GOING ON. BECAUSE I PRODUCE THE JOURNAL BY MYSELF, ANY PROBLEMS I HAVE ARE REFLECTED IN ITS PRODUCTION.

MY SINCERE THANKS GO TO ALL THE CONTRIBUTORS OF THE JOURNAL AND TO THEIR CONTINUING SUPPORT WITH CONSISTENT MATERIAL OF HIGH QUALITY AND THE JOURNAL OWES ITS SUCCESS TO THEM.

THANKS A MILLION — — —

I AM VERY SORRY TO HEAR ABOUT YOUR PROBLEMS IN RECOVERING FROM THE CAR ACCIDENT, THE END OF YOUR JOB AND DAMAGE FROM THE EARTHQUAKE. IT OCCURS TO ME THAT THESE EVENTS, THE EARTHQUAKE IN PARTICULAR, COULD HAVE CAUSED ADDITIONAL EXPENDITURE IN RESPECT OF THE JOURNAL—OR WILL DO SO. I WOULD BE QUITE HAPPY TO PAY SOME ADDITIONAL SUBSCRIPTION IN THAT REGARD. ACCORDINGLY, I ENCLOSE \$100.00 WHICH YOU CAN USE IN ANY WAY YOU CONSIDER APPROPRIATE.

YOURS SINCERLY, JOHN A. CORLETT

I WAS VERY MOVED BY JOHN'S OFFER AND AFTER CONSULTATION WITH HIM DONATED FUNDS TO NEWCASTLE EARTHQUAKE APPEAL. I COULD NOT ACCEPT THE MONEY BECAUSE THE EARTHQUAKE HAD NO EFFECT AS FAR AS THE JOURNAL PRODUCTION GOES. ONCE AGAIN I THANK JOHN FOR HIS GENEROUS AND SELFLESS OFFER. YOU'RE ONE IN A MILLION JOHN.

NOTE TO THE EDITOR — — —

FIRST A SUGGESTION, HOW ABOUT AN "ANSWER TO CORRESPONDENTS" COLUMN OR PAGE IN THE MAG? HAVE YOU TRIED IT OR THINK IT WORTHWHILE FOR THOSE WHO HAVE A QUERY OF SOME KIND, AND WHO AREN'T IN A RUSH FOR AN ANSWER.

I LIKED YOUR ARTICLES IN THE LAST ISSUE, BOTH THE ONE ON SELECTING A COMPUTER, AND THE OTHER ON KEYBOARDING. NOW I KNOW A BIT MORE ABOUT PAPER SIZES. VERY INTERESTING, ESPECIALLY SINCE I CONVERTED METRICS TO INCHES. A10 IS A TRIFLE SMALL, ISN'T IT?

THANKS FOR YOUR KIND WORDS JOHN ABOUT THE ARTICLES AND YOUR SUGGESTION.

DO YOU KNOW IF ANYONE HAS ADAPTED THE "LISTENING POST" HARDWARE AND SOFTWARE FROM THE ARTICLE IN THE JULY, 1985 ISSUE AUST. ELEC. MONTHLY, FOR USE WITH THE VZ? I WROTE TO TOM MOFFAT, THE AUTHOR, BUT HE INDICATED THAT HE WAS A MICROBEE MAN, AND TOO BUSY TO WORRY ABOUT OTHER MAKES OF COMPUTER, BUT I DID NOTE LATER THAT A.E.M. WAS LATER OFFERING SOFTWARE FOR THE C64 AS WELL AS THE MICROBEE.

IF YOU CAN HELP CONTACT: JOHN LUXTON PO BOX 99 BIGGENDEN 4621 (071) 271 1515

DISCLAIMER — — —

EVERY EFFORT IS MADE TO INSURE THE ACCURACY OF INFORMATION CONTAINED WITHIN BE IT GENERAL, TECHNICAL, PROGRAMMING, ETC. NO RESPONSIBILITY CAN BE ACCEPTED BY HUNTER VALLEY VZ USERS' GROUP OR THE AUTHOR AS A RESULT OF APPLYING SUCH INFORMATION IN PRACTICE.

# YOUR PAGE - - -

STARTING WITH THIS ISSUE THE JOURNAL WILL HAVE A PAGE DEVOTED TO YOU. YOUR COMMENTS, SUGGESTIONS, REQUESTS FOR HELP, ADS, OR ANSWERS WILL GO IN THIS PAGE. AS YOU'LL NOTE I'VE STARTED THE BALL ROLLING WITH TWO HELP REQUESTS AND QUITE A FEW FOR SALE ADS. SO IF YOU'RE AFTER SOME VZ GEAR, JUST MAKE YOUR CHOICE AND PAY YOUR MONEY. DON'T BE SHY, SHARE YOUR VIEWS WITH OTHER VZ USERS.

HELP - I'M RUNNING A BIT SHORT ON ARTICLES AGAIN FOR THE JOURNAL AND YOUR HELP IN THIS REGARD WOULD BE APPRECIATED. ED.

HELP - THE NEWCASTLE MICROCOMPUTER EXHIBITION WILL BE HELD IN SEPTEMBER THIS YEAR AND AS USUAL WE'LL BE THERE. WE ARE LOOKING FOR YOUR SUPPORT SO WE CAN PRESENT A BETTER DEMONSTRATION AND NEED HELP IN THE FOLLOWING AREAS:-

SCREENS - HI-RES (2K) & SUPER HI-RES (6K) SCREENS - NEEDED ALSO SCREEN OF A PUB.  
MUSIC - ANY TUNES IN DATA OR SOUND STATEMENTS OR MUSIC WRITER TUNES.  
XB BASIC SOUND ROUTINES OR DEMOS  
DEMOS - DEMONSTRATION PROGRAMS, ANY TYPE AND IDEAS GALORE.

IF YOU CAN HELP OUT PLEASE CONTACT:- JOE LEON 22 DRURY STREET WALLSEND 2287.  
NOTE - ALL TAPES/DISKS AND MATERIAL WILL BE RETURNED. ED.

## FOR SALE - - -

- 1 OFF VZ300 WITH POWER PACK AND MANUAL - \$60.00
- 1 OFF VZ300 16K MEMORY EXPANSION - \$20.00 - 1 OFF DSE DATA RECORDER - \$40.00
- 1 OFF D.S. 100 PRINTER - \$120.00 - 1 OFF PRINTER INTERFACE - \$30.00
- 1 OFF LASER DISK DRIVE, LASER DISK CONTROLLER & POWER SUPPLY - \$200.00
- 1 OFF EXTENDED DOS EPROM WITH INSTRUCTIONS FOR INSTALLATION - \$30.00
- 1 OFF AWA MONITOR & 1 OFF 14" B&W TV - N/C (NO CHARGE)

PROGRAMS - \$20.00

TAPE - DSE WORD PRO., AND OTHERS ON TAPE.

DISK - WORD PRO., GRAFSTAR, LASER CALC, DATA-BASE, MAIL-LIST, FAST DISK, DATA, 3D MAZE, FILE SEARCH, W.P. PATCH 3.1 AND DISK MENU.

TOTAL PRICE - \$520.00 - CONTACT R.E. FEAR 82 ALLWOOD CRESCENT LUGARNO 2210

## FOR SALE - - -

- 1 OFF VZ200 & AQUARIUS DATASSETTE - \$50.00 PLUS \$5.00 POST AND PACKING.
- 1 OFF VZ200, VZ DATASSETTE, VZ200 16K MEMORY EXPANSION & PRINTER I/FACE - \$100.00 PLUS \$15.00 POST AND PACKING.

CONTACT ALEX TAYLOR ON - (049) 683 509 - ANY DAY AFTER 6.30PM.

## FOR SALE - - -

- 1 OFF VZ300 - SUPER GRAPHICS MODIFIED - 256 X 192 PIXEL RESOLUTION.
- 1 VZ300 DATASSETTE, 1 PRINTER I/FACE, 1 LIGHT PEN AND STACKS OF TAPES.

CONTACT:- MATTHEW TAYLOR - (049) 528 755 - 230/9 NEWCASTLE ROAD JESMOND 2299

## FOR SALE - - -

I HAVE SOME VZ BITS AND PIECES THAT ARE SURPLUS TO MY REQUIREMENTS AND OFFER THEM FOR SALE:-

- 1 OFF VZ WORDPRO CARTRIDGE WITH INSTRUCTION MANUAL - \$38.00
- 1 OFF VZ DATASSETTE (DR20) - \$40.00
- 1 OFF VZ JOYSTICKS - \$28.00 - 1 OFF VZ PRINTER INTERFACE - \$18.00

PRICES INCLUDE POSTAGE TO EASTERN STATES, OTHER PTATES ADD \$2.00. FOR FURTHER INFORMATION CONTACT - JOHN LUXTON P.O. BOX 99 BIGGENDEN 4621 (071) 271 515.

I MUST STATE THAT I DID NOT CREATE THIS PROGRAM. I AM ADVISED THAT IT WAS ORIGINALLY WRITTEN BY JAMIE PERRY AND WAS KNOWN AS THE "EPSON PRINTER PATCH", ALL CREDIT IN THAT REGARD GOES TO HIM.

I MERELY ALTERED IT TO ALLOW ME TO USE MY PRINTER'S GRAPHIC CAPACITY TO PRINT OUT GRAPHIC SYMBOLS AND INVERSE TEXT.

THIS UTILITY IS OFFERED IN SIMILAR FORM TO THE ORIGINAL, IT OCCUPIES THE SAME MEMORY AREA, IT WILL OPERATE THE TANDY DMP 105 AND PROBABLY VERY FEW OTHERS.

PROGRAMMERS WHO AVAIL THEMSELVES OF THE SOURCE CODE LISTING MAY LOCATE THE PROGRAM IN AN AREA OF MEMORY MORE APPROPRIATE TO THEIR REQUIREMENTS.

#### BASIC LISTING FOR TANDY PRINTER PATCH

```

00010 FOR I = -21937 TO -21713
00020 READA:POKE I,A
00025 CHECKSUM = CHK+A:NEXT
00030 DATA62,195,50,193,121,53,102,170,34,194,121,205,201,1,33
00032 DATA17,171,205,167,40,195,25,26,58,154,120,51,51,183,121
00034 DATA193,250,84,59,202,58,3,229,245,33,155,120,52,126,254
00036 DATA79,32,7,54,0,62,13,205,186,58,241,225,254,13,32,7,62
00038 DATA0,50,155,120,62,13,183,250,154,170,195,186,58,203,119
00040 DATA40,58,230,63,245,197,213,229,111,38,0,62,18,205,186,58
00042 DATA6,4,229,209,183,237,90,16,252,229,193,33,148,59,9,62
00044 DATA255,205,186,58,6,5,126,35,205,186,58,16,249,62,255,205
00046 DATA186,58,62,30,205,186,58,225,209,193,241,201,197,71,62
00048 DATA18,205,186,58,120,230,15,229,203,39,79,62,30,145,79,175
00050 DATA71,33,175,2,9,126,71,35,126,79,120,205,186,58,205,186
00052 DATA58,205,186,58,121,205,186,58,205,186,58,205,186,58,62
00054 DATA30,205,186,58,225,193,201,13,84,65,78,68,89,32,80,82
00056 DATA73,78,84,69,82,32,80,65,84,67,72,32,76,79,65,68,69,68
00058 DATA13,0,0,0
00075 IF CHECKSUM <> 25562 THEN PRINT"DATA ERROR":END
00080 CLS:PRINT"SAVE TO DISK OR TAPE (D/T)"
00090 A1$=INKEY$:A$=INKEY$:IF A$<>"D"AND A$<>"T" THEN 90
00100 SOUND30,1:IF A$="T" THEN 180
00110 IF PEEK( 16384 ) = 170,140
00120 PRINT"NO DISK DRIVE TO USE"
00130 GOTO 180
00140 PRINT"INSERT DISK,CLOSE DOOR & PRESS RETURN"
00150 IF INKEY$<>CHR$(13),150
00155 SOUND30,1
00160 BSAVE"TANDY",AA4F,AB2F
00170 END
00180 FOR I = 29440 TO 29484
00190 READ A: POKE I,A: NEXT
00200 PRINT"INSERT CASSETTE.PRESS PLAY & RECORD THEN RETURN"
00210 IF INKEY$ <> CHR$(13),210
00220 SOUND30,1
00230 POKE30862,0:POKE30863,115:X=USR(0)
00240 END
00250 DATA33,79,170,34,164,120,33,47,171,34,249,120
00260 DATA33,38,115,14,241,243,205,172,52,251,33,233,122
00270 DATA34,164,120,205,248,26,35,34,249,120
00280 DATA195,25,26,34,84,65,78,68,89,34

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001 ;
002 ; *** TANDY ***
003 ;
004 ;VERSION OF THE EPSON PATCH
005 ;FOR THE TANDY PRINTER
006 ;JULY 13 1989
007 ;
A92D 3E C3      008      LD      A,0C3H
A92F 32 C1 79    009      LD      (79C1H),A
A932 21 44 A9    010      LD      HL,STRT
A935 22 C2 79    011      LD      (79C2H),HL
A938 CD C9 01    012      CALL   01C9H
A93B 21 EF A9    013      LD      HL,MES
A93E CD A7 28    014      CALL   28A7H
A941 C3 19 1A    015      JP      1A19H
A944 3A 9C 78    016 STRT LD      ,, (789CH)
A947 33          017      INC     SP
A948 33          018      INC     SP
A949 B7          019      OR      A
A94A 79          020      LD      A,C
A94B C1          021      POP     BC
A94C FA 54 3B    022      JP      M,3B54H
A94F CA 3A 03    023      JP      Z,033AH
A952 E5          024      PUSH    HL
A953 F5          025      PUSH    AF
A954 21 9B 78    026      LD      HL,789BH
A957 34          027      INC     (HL)
A958 7E          028      LD      A,(HL)
A959 FE 4F       029      CP      4FH
A95B 20 07       030      JR      NZ,POP
A95D 36 00       031      LD      (HL),0
A95F 3E 0D       032      LD      A,0DH
A961 CD BA 3A    033      CALL   3ABAH
A964 F1          034 POP     POP     AF
A965 E1          035      POP     HL
A966 FE 0D       036      CP      0DH
A968 20 07       037      JR      NZ,FORD
A96A 3E 00       038      LD      A,0
A96C 32 9B 78    039      LD      (789BH),A
A96F 3E 0D       040      LD      A,0DH
A971 B7          041 FORD   OR      A
A972 FA 78 A9    042      JP      M,TWOD
A975 C3 BA 3A    043      JP      3ABAH
A978 CB 77       044 TWOD   BIT     6,A
A97A 28 3A       045      JR      Z,GRPH
A97C E6 3F       046      AND     3FH
A97E F5          047      PPUSH   AF
A97F C5          048      PUSH    BC
A980 D5          049      PUSH    DE
A981 E5          050      PUSH    HL
A982 6F          051      LD      L,A
A983 26 00       052      LD      H,0
A985 3E 12       053      LD      A,12H
A987 CD BA 3A    054      CALL   3ABAH
A98A 06 04       055      LD      B,4
A98C E5          056      PUSH    HL
A98D D1          057      POP     DE
A98E B7          058      OR      A
A98F ED 5A       059 LP     ADC     HL,DE
A991 10 FC       060      DJNZ   LP
A993 E5          061      PUSH    HL

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A994	C1		062	POP	BC
A995	21	94 3B	063	LD	HL, 3B94H
A998	09		064	ADD	HL, BC
A999	3E	FF	065	LD	A, OFFH
A99B	CD	BA 3A	066	CALL	3ABAH
A99E	06	05	067	LD	B, 5
A9A0	7E		068	LP1 LD	A, (HL)
A9A1	23		069	INC	HL
A9A2	CD	BA 3A	070	CALL	3ABAH
A9A5	10	F9	071	DJNZ	LP1
A9A7	3E	FF	072	LD	A, OFFH
A9A9	CD	BA 3A	073	CALL	3ABAH
A9AC	3E	1E	074	LD	A, 1EH
A9AE	CD	BA 3A	075	CALL	3ABAH
A9B1	E1		07	POP	HL
A9B2	D1		077	POP	DE
A9B3	C1		078	POP	BC
A9B4	F1		079	POP	AF
A9B5	C9		080	RET	
A9B6	C5		081	GRPH PUSH	BC
A9B7	47		082	LD	B, A
A9B8	3E	12	083	LD	A, 12H
A9BA	CD	BA 3A	084	CALL	3ABAH
A9BD	78		085	LD	A, B
A9BE	E6	0F	086	AND	OFH
A9C0	E5		087	PUSH	HL
A9C1	CB	27	088	SLA	A
A9C3	4F		089	LD	C, A
A9C4	3E	1E	090	LD	A, 1EH
A9C6	91		091	SUB	C
A9C7	4F		092	LD	C, A
A9C8	AF		093	XOR	A
A9C9	47		094	LD	B, A
A9CA	21	AF 02	095	LD	HL, 02AFH
A9CD	09		096	ADD	HL, BC
A9CE	7E		097	LD	A, (HL)
A9CF	47		098	LD	B, A
A9D0	23		099	INC	HL
A9D1	7E		100	LD	A, (HL)
A9D2	4F		101	LD	C, A
A9D3	78		102	LD	A, B
A9D4	CD	BA 3A	103	CALL	3ABAH
A9D7	CD	BA 3A	104	CALL	3ABAH
A9DA	CD	BA 3A	105	CALL	3ABAH
A9DD	79		106	LD	A, C
A9DE	CD	BA 3A	107	CALL	3ABAH
A9E1	CD	BA 3A	108	CALL	3ABAH
A9E4	CD	BA 3A	109	CALL	3ABAH
A9E7	3E	1E	110	LD	A, 1EH
A9E9	CD	BA 3A	111	CALL	3ABAH
A9EC	E1		112	POP	HL
A9ED	C1		113	POP	BC
A9EE	C9		114	RET	
A9EF	0D		115	MES	DEFB 0DH
			116	EQU	\$
A9F0	-	TEXT -	117	*TANDY PRINTER PATCH LOADED*	
AA0A	0D		118	DEFB	0DH
AA0B	00		119	NOP	
AA0C	00		120	NOP	
AA0D	00		121	NOP	
BYTES FREE :- 21359			ERRORS : 00000		



(TEXT AND CIRCUITS BY JOE LEON)

SOME ISSUES BACK I STATED THAT ONE POWER SUPPLY COULD POWER TWO DRIVES. SINCE THEN NEVILLE HAS INFORMED ME THAT:-

"YER WRONG MATE", IN SOME CASES. WHEN I BOUGHT SECOND DRIVE COUPLE YEARS BACK, THE RED LIGHT CAME ON AT POWER UP BUT "NO GO", SO MADE SECOND LEAD FROM SUPPLY ('Y' ADAPTOR) AND ALL OK. BOUGHT THIRD UNIT (2ND HAND), FORGOT TO PLUG IN POWER LEAD AND IT WORKED, SO PULLED DRIVES APART AND FOUND THE P.C. BOARDS WERE DIFFERENT.

IN HIS LETTER NEVILLE WENT ON TO DESCRIBE THE DIFFERENCES AND HOW TO RECTIFY THEM. RECENTLY I BOUGHT ANOTHER DISK DRIVE AND CONTROLLER MYSELF AND DISCOVERED THAT THE DISK CONTROLLER PCB'S CAN BE DIFFERENT AS WELL AND THIS ARTICLE IS INTENDED TO PROVIDE INFORMATION ON HOW TO RECTIFY THE PROBLEM/S AND FOR PERSONS WHO HAVE TWO POWER SUPPLIES FREE UP SECOND UNIT FOR OTHER PURPOSES.

BEFORE PROCEEDING ANY FURTHER I WOULD LIKE TO MAKE IT QUITE CLEAR THAT ONE POWER SUPPLY WILL SUPPLY ENOUGH POWER FOR TWO DRIVES. THE ELECTRONICS OF BOTH DRIVES ARE ON AT THE SAME TIME, BUT ONLY ONE DRIVE AND ITS STEPPER MOTOR IS ACCESSED AT ANY ONE TIME.

FOR TWO DRIVES TO WORK WITH ONE POWER SUPPLY, BOTH DRIVES MUST BE PROVIDED WITH GND, +5V AND +12V AND DRIVE WITHOUT POWER SUPPLY GETS ITS SUPPLY VIA THE RIBBON CABLE. WHEN EITHER +5V OR +12V OR BOTH DON'T REACH SECOND DRIVE THEN OBVIOUSLY IT CAN'T FUNCTION PROPERLY.

WE'LL START BY LOOKING AT J1, 20 PIN IDC PLUG/SOCKET AT THE TOP REAR OF THE DISK DRIVE 1 PCB FIRST. PINS 1, 3, 5 & 7 ARE ALL CONNECTED TO GROUND. PINS 11 & 12 GO TO +5V. PINS 13, 15, 17 & 19 ACCORDING TO TECHNICAL REFERENCE ARE NOT CONNECTED TO ANYTHING, BUT ARE JOINED TO EACH OTHER UNDER THE PCB.

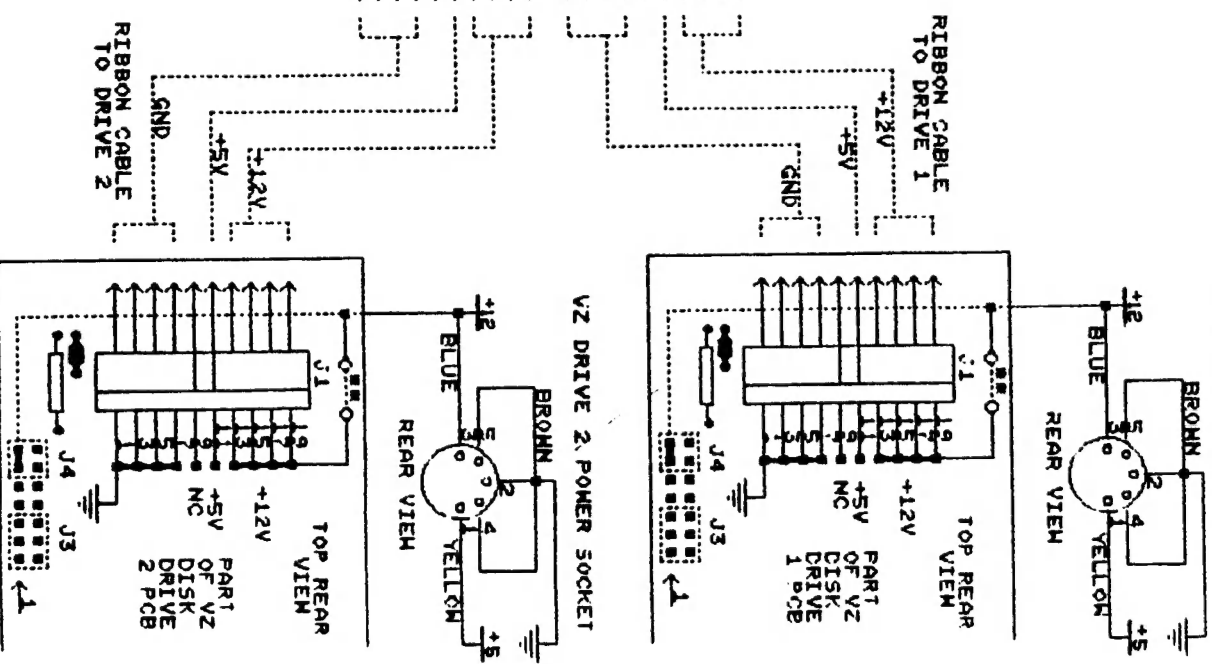
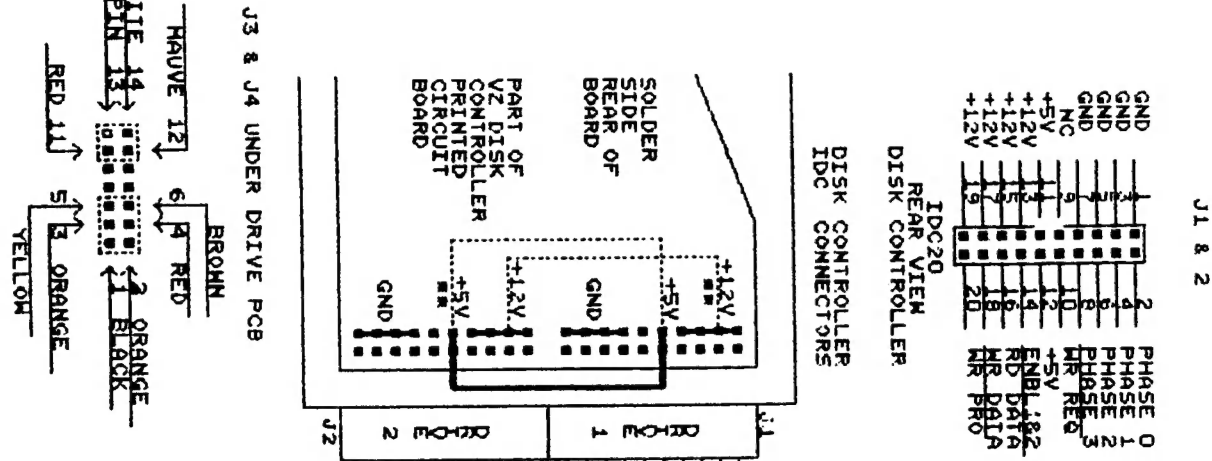
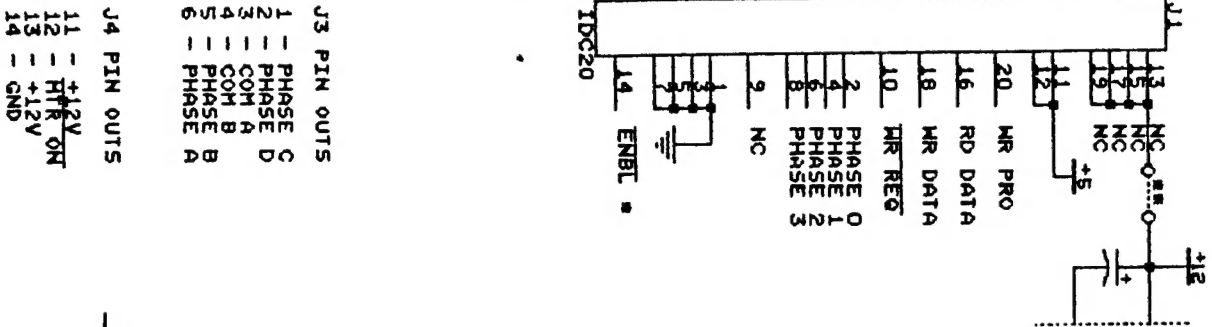
IN BOTH MY DRIVES THE ABOVE PINS ARE CONNECTED TO +12V VIA A LINK WIRE AND IN SOME DRIVES THIS LINK WIRE IS MISSING. IT MAY BE EASIER TO UNDERSTAND IF WE FOLLOW THE PATH THE POWER TAKES WHEN IT ENTERS THE DRIVE POWER SOCKET. WE'LL PRESUME POWER IS CONNECTED TO DRIVE ONE.

THE GND (PINS 5, 2 & 4), +5V (PIN 1) & +12V (PIN 3) APPEAR AT THE 5 PIN DIN SOCKET AT REAR RIGHT OF THE DRIVE AND GO UNDER THE REAR OF THE MAIN PCB WHERE THEY ARE SOLDERED TO THEIR RESPECTIVE TRACKS. THE +12V TRACK CONTINUES UNDER THE BOARD AND IS ALSO CONNECTED TO J4, PINS 11 & 13. NOTE: J4, PIN 13 IS CUT AWAY UNDER PCB.

THE LINK MARKED WITH TWO ASTERICKS GOES FROM THE +12V TRACK UNDER THE PCB TO J1 PINS 13, 15, 17 & 19 ALSO UNDER THE PCB. THIS IS THE LINK THAT IS MISSING ON DRIVES THAT WON'T WORK WITH ONE POWER SUPPLY.

IF WE FOLLOW THE THREE SUPPLY RAILS TO THE DISK CONTROLLER WE'LL NOTE THAT FOR SECOND DRIVE TO GET POWER THE +5V MUST GO FROM J1, PINS 11 & 12 TO J2, PINS 11 & 12. THE +12V MUST ALSO GO FROM J1, PINS 13, 15, 17 & 19 TO J2, PINS 13, 15, 17 & 19. IN SOME DISK CONTROLLERS THERE MAY BE NO CONNECTION/S BETWEEN J1 & J2 +5V AND OR +12V SUPPLY RAILS. THE DASHED LINE/S INDICATE WHERE YOU WOULD SOLDER LINK WIRE/S.

GOING FROM DISK CONTROLLER J2 IDC SOCKET TO DRIVE 2, J1 SOCKET WE FIND THE SAME APPLIES AS IN DRIVE 1, J1. THAT MEANS WE MUST HAVE +5V & +12V APPEARING AT J1 FOR DRIVE 2 TO OPERATE PROPERLY.



AND NOW TO THE DETAILS ON HOW TO FIX THE PROBLEM IF ONE POWER SUPPLY DOES'NT WORK WITH TWO DRIVES. FIRST YOU'LL HAVE TO REMOVE THE TOP COVERS OF BOTH DRIVES AND DISK CONTROLLER BUT LEAVE UNITS IN BOTTOM HALF OF CASES AND THEN PLUG BOTH DRIVES INTO THE DISK CONTROLLER SO CHECKS CAN BE MADE.

USING A MULTIMETER OR CONTINUITY TESTER START AT DRIVE 1. CONNECT ONE TESTER PROBE TO PIN 3 (+12V) ON 5 PIN POWER SOCKET AND OTHER TESTER PROBE TO TOP 4 PINS ON J1, PIN 13, 15, 17 & 19. IF YOU DON'T HAVE CONTINUITY THEN IT MEANS THE +12V LINK WIRE IS MISSING AND HAS TO BE PUT IN PLACE.

NEXT MAKE THE SAME CHECKS ON DRIVE 2 AS WELL AND THEN PROCEED TO DISK CONTROLLER NEXT. CHECK FOR +5V CONTINUITY BETWEEN J1 AND J2 AND THEN CHECK FOR +12V CONTINUITY BETWEEN J1 AND J2 WHICH FINISHES THE CHECKING AND ONLY LEAVES PUTTING THE MISSING LINK WIRES IN PLACE.

#### REPLACING MISSING DISK DRIVE LINK:-

SOLDER ONE END OF A LENGTH OF COVERED WIRE TO PIN 3 OF 5 PIN DIN SOCKET AND THE OTHER END TO J1, PIN 13 AND PINS 15, 17 & 19 AS WELL. DO THIS TO BOTH DRIVES IF NECESSARY.

#### REPLACING MISSING DISK CONTROLLER LINK/S:-

IF THERE'S NO CONTINUITY OF +5V BETWEEN J1 & J2 THEN SOLDER A COVERED LINK WIRE BETWEEN POINTS INDICATED BY DASHED LINE. DO THE SAME FOR J1 & J2 IF THERE'S NO CONTINUITY OF +12V BETWEEN POINTS INDICATED BY DASHED LINE. THAT COMPLETES THE FIXUP WHICH YOU MUST AGREE WASN'T DIFFICULT AT ALL, ONLY 4 LINK WIRES AT MOST.

ALL THAT REMAINS NOW IS TO TEST OUT AND YOU SHOULD FIND THAT YOUR ONE POWER SUPPLY WILL POWER 2 DRIVES EASILY. AS DISK DRIVE POWER SUPPLIES ARE VERY HARD TO COME BY, YOU MUST AGREE THAT ONE TO FOUR LINK WIRES ARE A VERY CHEAP ALTERNATIVE.

#### J1 & J2 IDC CONNECTORS:-

THESE NEED A BIT OF AN EXPLANATION AS BOTH DRIVES AND DISK CONTROLLER USE THE TERM J1. THE BLOCK DIAGRAM ON TOP LEFT IS AS IN THE TECHNICAL REFERENCE MANUAL AND SHOWS PIN FUNCTIONS. THE J1 & J2 PINOUT DIAGRAM SHOWS ORIENTATION AS WELL. THE ONLY DIFFERENCE BETWEEN J1 & J2 IN THE DISK CONTROLLER IS PIN 14 MARKED WITH AN ASTERICK WITH J1 SUPPLYING DRIVE 1 AND J2 DRIVE 2 ENABLE SIGNALS. ALL OTHER SIGNALS ARE COMMON BETWEEN J1 & J2 IN DISK CONTROLLER AND J1 IN BOTH DRIVES.

#### J3 & J4 HEADERS:-

BOTH THESE CONNECTORS ARE UNDER THE MAIN PCB AND SLIP OFF VERY EASILY IF FOR SOME REASON YOU TRY REMOVING PCB AS THE LEADS ARE VERY SHORT AND ARE DIFFICULT TO REPLACE. THE PINOUT AT BOTTOM OF PAGE SHOWS PIN NUMBERS AND WIRE COLOURS. J3 COLOURS CAN VARY, BUT PIN 1, BLACK SEEMS TO BE CONSTANT. J4 HAS ONLY 3 WIRES AND PIN 13 IS NOT USED. NOTE: PIN 13 UNDER THE BOARD IS CUT AWAY.

NOTE - DO NOT DO THE MODS IF YOU HAVE NO PROBLEMS WITH ONE POWER SUPPLY AND TWO DRIVES. I WOULD LIKE TO EXPRESS MY THANKS TO NEVILLE HUGHES FOR TRACKING DOWN THE PROBLEM AND ESPECIALLY FOR SHARING THE SOLUTION WITH US.

THE SCREENS ARE BUILT USING A GRAPHICS EDITOR. I WOULD SUGGEST BRUCE KITCH'S ART GALLERY AS BEING SUITABLE. THE FILES MUST LOAD INTO THE VIDEO DISPLAY AREA I.E. 7000H-77FFH. (BUT SEE LATER COMMENTS).

HAVING COME THIS FAR, THE ACTUAL READ-IN LOOP IS QUITE SIMPLE! A TRIPLE-NESTED LOOP CONSTRUCT IS USED. THE OUTER LOOP SWITCHES THE MEMORY BANKS SEQUENTIALLY. THE INTERMEDIATE LOOP PASSES THE MSB OF THE DESTINATION IN THE SELECTED BANK TO THE M/L ROUTINE. THE INNER LOOP READS THE FILENAME FROM THE DATA STATEMENT, CHECKS ITS SIZE, POKES THE NAME INTO ANOTHER AREA OF THE PROGRAM AND FINALLY LOADS THE FILE INTO THE VIDEO DISPLAY AREA. FINALLY THE SCREEN PAGE IS MOVED UP INTO THE MEMORY BANK FOR STORAGE. THIS COMPLETES THE WORK THAT LOADUP CARRIES OUT.

THE FINAL BASIC PROGRAM CALLED THROWUP IS AUTOLOADED. THIS IS A SIMPLE ROUTINE THAT USES A TRIPLE-NESTED LOOP SIMILAR TO THAT OUTLINED FOR LOADUP EXCEPT THAT THE SCREEN PAGES ARE BROUGHT DOWN FROM HI-MEM TO THE VIDEO DISPLAY AREA. THE MSB OF THE SOURCE AND DESTINATION ADDRESSES ARE INTERCHANGED TO ACHIEVE THIS CHANGE IN SENSE OF MOVEMENT. THE INNER LOOP IS A DELAY LOOP TO SLOW DOWN THE SPEED OF THE PAGING. AS WRITTEN, TWO OPTIONS EXIST TO DISPLAY THE 24 SCREENS. A SIMPLE OR PLAIN DISPLAY USES THE SMALL BLOCK MOVE ROUTINE. A CONSIDERABLE AMOUNT OF "HASH" APPEARS USING THIS NON-INTERRUPT DRIVEN ROUTINE. THE SCREEN BUFFER IS NOT USED. THE SECOND OPTION FOR DISPLAY USES THE ROUTINES IN MOVEUP. THESE USE THE INTERRUPT-DRIVEN DISPLAY SYSTEM AND ARE COMPLETELY "HASH-FREE".

#### DISCUSSION OF MOVEUP.

THE SOURCE CODE FOR MOVEUP IS BY FAR THE MOST INTERESTING AND ILLUMINATING PORTION OF THE PROJECT. IT CONSISTS OF A NUMBER OF GENERAL PURPOSE "PRIMITIVE" SUBROUTINES.

THERE ARE NINE "FANCY" SCREEN MOVE ROUTINES. THE ACTION OF THESE IS DESCRIBED BY THEIR TITLES - SPLAT, OPEN-UP, ROLL UP/DOWN, PUSH UP/DOWN, FOUR BAR ROLL DOWN, AND L-R/R-L SWEEPS. WITH THE EXCEPTION OF THE SWEEPS, ALL OTHER SCREEN MOVES INVOLVE VERICAL MOVEMENTS OF THE PICTURES. THIS MOVEMENT IS THE EASIEST TO PROGRAM AS CONSECUTIVE BLOCKS OR LINES OF THE SCREEN ARE MOVED USING THE BLOCK MOVE COMMAND. MOST OF THE ADDITIONAL PROGRAMMING KEEPS TRACK OF THE APPROPRIATE SOURCE, DESTINATION AND SIZE POINTERS. USUALLY EITHER A 2K BLOCK (ONE FULL SCREEN), OR A 3 BYTE (ONE SCREEN LINE), PORTION OF MEMORY IS REQUIRED TO BE MOVED.

THE SWEEPS ARE MUCH MORE DIFFICULT TO PROGRAM. THE LOGIC USED TO ACHIEVE THE HORIZONTAL REPLACEMENT, TWO BITS AT A TIME, IS THE SUBJECT OF A FURTHER ARTICLE ON LOGICAL OPERATORS. EXPERIENCED PROGRAMMERS MAY FOLLOW THE METHOD THROUGH THE COMMENTS INSERTED IN THE SOURCE CODE. SOME VERY ELEGANT MATHEMATICS IS USED.

ALL OF THE MOVE ROUTINES WRITE TO A SCREEN BUFFER RATHER THAN DIRECTLY INTO THE VIDEO DISPLAY RAM AREA. ALSO DURING THIS WRITE PERIOD, ALL INTERRUPTS ARE DISABLED SO THAT PROCESSING SPEED IS OPTIMIZED. THE SCREEN BUFFER IS USED SO THAT THE VIDEO DISPLAY MAY BE INTERRUPT DRIVEN SUCH THAT FLICKER OR HASH IS AVOIDED.

THE TIMING OF THE INTERRUPT DRIVEN DISPLAY, THAT ELIMINATES THE SCREEN HASH, IS ACHIEVED BY TWO ROUTINES THAT ARE CALLED FROM THE INTERRUPT VECTOR. THE SCREEN BUFFER IS MOVED IN TWO HALVES AS THERE IS INSUFFICIENT TIME IN THE DISPLAY FLYBACK PERIOD TO MOVE THE ENTIRE 2K SCREEN. A DISPLAY AND PAUSE ROUTINE IS ENTERED TO PERMIT THE SCREEN BUFFER TO BE MOVED INTO THE VIDEO DISPLAY RAM. THE PAUSE LOOP IS LOCATED IN THE DOS ROM, AND BY CHOOSING A SUITABLE DURATION, A SMOOTH MOVEMENT CAN BE OBTAINED.

TWO OTHER GENERAL PURPOSE SUBROUTINES ARE GIVEN THAT SAVE AND RESTORE THE REGISTER SET TO THE STACK UPON ENTRY AND EXIT TO ANY MACHINE CODE. FURTHERMORE, THE REGISTER VALUES ARE UNCHANGED. VERY USEFUL.

FINALLY, THE USE OF A JUMP TABLE TO ENTER THE NINE ROUTINES CONSIDERABLY SIMPLIFIES THE SET-UP OF THE USR POINTERS. THIS TECHNIQUE IS TO BE RECOMMENDED.

#### FURTHER ENHANCEMENTS.

THAT ABOUT OUTLINES THE ESSENTIALS OF THE PROGRAMS. NOTE THAT INSTRUCTIONS ARE INSERTED IN THE CODE TO ALLOW THE PROCEDURES TO BE FOLLOWED. ALSO THE CODE HAS BEEN WRITTEN WITH SPECIFIC CONSTANTS INSERTED RATHER THAN GENERALIZED VARIABLES. FOR THOSE WHO ARE INTERESTED, IT IS POSSIBLE TO STORE A COUPLE OF FURTHER SCREENS IN THE TOP OF BANK 0 BY SETTING THE TOP-OF-MEMORY EVEN LOWER BUT THE ELEGANCE OF THE TRIPLE-NESTED LOOPS IS LOST! (REFER LOAD MAP).

A FURTHER REFINEMENT OF THE LOADING AND SAVING TECHNIQUE IS SHOWN IN THE CODE FOR THROWUP. ON REFLECTION AND WHEN THE 24 SCREENS ARE LOADED INTO THE BUFFERS IN HI-MEM, THERE ARE IN REALITY THREE 16K BLOCKS OF DATA EXTENDING FROM C000H TO FFFFH. IT WOULD BE CONVENIENT AND A LITTLE FASTER, TO SAVE AND LOAD THESE 16K BLOCKS TO- AND FROM- DISK RESPECTIVELY. DIALOG ENCOUNTERED DURING PROGRAM EXECUTION INDICATES HOW THIS REFINEMENT CAN BE ACHIEVED.

OBSERVANT PROGRAMMERS WILL NOTICE THAT SUBROUTINE SC0 "(SPLAT)" IN MOVEUP IS NOT USED IN THE PRESENT VERSION. THIS CAN BE USED IN LIEU OF THE 14 BYTE M/L ROUTINE AND PROVIDE HASH-FREE ANIMATION.

ONE FURTHER ENHANCEMENT IS TO USE DATA COMPRESSION TECHNIQUES TO STORE THE SCREENS INTO THE BUFFER AREAS. MOST GRAPHIC SCREENS HAVE MANY SECTIONS OF "SHARED" BYTES, FOR EXAMPLE, IN "BACKGROUND" AREAS. THIS WOULD BE A VERY FRUITFUL AREA FOR EXPERIMENTATION AS MANY MORE THAN 24 SCREENS COULD BE STORED IN THE 64K PACK.

I TRUST THAT THIS ARTICLE PROVIDES SOME INSIGHT INTO AN INTERESTING AREA OF PROGRAMMING. SHOULD ANYONE WISH TO COMMUNICATE WITH ME ON THEIR EFFORTS, THEN I WOULD BE PLEASED TO DO SO. A NUMBER OF THESE ENHANCEMENTS ARE OPERATIONAL ON MY "FULLY-FLEDGED" VERSION.



```

10 *****
20 ***      LOAD-UP PROGRAM II OF III TO LOAD 24 HI-RES      ***
30 *** SCREENS INTO 64K MEMORY EXPANSION.  BOB KITCH 6/88 ***
40 *****
898
899 ***START SUBPROGRAM.
900 GOTO 1100
998
999 ***LOAD 2K SCREEN FILE.
1000 BLOAD"ABCDEFGH":          :****POKE ADDR. 31825 TO 31832
1010 GOTO 2220
1020 ***DO NOT ALTER ANY CODE ABOVE THIS LINE.
1030 ***OTHERWISE CHANGE AD% IN LINE #2100
1098
1099 ***CHECK THAT 64K MEM. EXP. OPERATIONAL.
1100 GOSUB 3020
1110 FL%=0                    :****FLAG FOR TEST CONDITIONS.
1120 FOR I%=1 TO 3            :****BANKS 1 TO 3.
1130     OUT 127,I%:SOUND 9,2  :****I/O PORT 7FH.
1140     POKE -1000,(100-I%)   :****TEST ADDR. 0FC18H.
1150 NEXT I%
1160 FOR I%=3 TO 1 STEP -1     :****BANKS 3 TO 1.
1170     OUT 127,I%: ID 9,2
1180     IF PEEK(-1000)<>(100-I%) THEN FL%=-1
1190 NEXT I%
1200 IF FL%<>0 THEN PRINT@64,"64K RAM NOT FITTED.":STOP
1210 IF FL%=0 THEN PRINT@64,"64K RAM OK"
1298
1299 ***CHECK THAT DOS OPERATIONAL BY CHECKING FIRST 4 ID BYTES
1300 IF (PEEK(16384))<>170 THEN FL%=-1          :****<0AAH>@4000H
1310 IF (PEEK(16385))<>85 THEN FL%=-1           :****<55H>@4001H
1320 IF (PEEK(16386))<>231 THEN FL%=-1          :****<0E7H>@4002H
1330 IF (PEEK(16387))<>24 THEN FL%=-1           :****<18H>@4003H
1340 IF FL%<>0 THEN PRINT@128,"DOS NOT FITTED.":STOP
1350 IF FL%=0 THEN PRINT@128,"DOS OK"
1398
1399 ***CHECK TOM IS OBEC8H
1400 IF (PEEK(30897))<>200 THEN FL%=-1
1410 IF (PEEK(30898))<>190 THEN FL%=-1
1420 IF FL%<>0 THEN PRINT@192,"TOM NOT SET CORRECTLY":STOP
1430 IF FL%=0 THEN PRINT@192,"TOM OK"
1496
1497 ***LOWER OOM TO 0AFFFH FOR BUFFER, M/L AND JUMP POINTERS..
1498 ***OB200H-0B8FFH IS A SCREEN BUFFER.
1499 ***OBC00H-0BE0FH IS M/L MOVE ROUTINES LOADED FROM "MOVEUP"
1500 POKE 30897,255:POKE 30898,175:CLEAR 50
1510 PRINT:PRINT"LOADING MOVE-UP ROUTINE."
1520 BLOAD"MOVEUP":          :****LOAD SCREEN MOVE SUBS.
1598
1599 ***POKE IN BLOCK MOVE FROM OBEABH. (OBE10H-OBEAAH SPARE.)"
1600 DATA 243                : DI
1610 DATA 033,000,112        : LD HL,7000H      (SOURCE)
1620 DATA 017,000,192        : LD DE,C000H      (DESTINATION)
1630 DATA 001,000,008        : LD BC,0800H      (SIZE)
1640 DATA 237,176            : LDIR
1650 DATA 251                : EI
1660 DATA 201                : RETURN
1670 FOR AD%=-16725 TO -16712 :****FROM OBEABH TO OBE8BH.
1680     READ DT%:POKE AD%,DT%
1690 NEXT AD%
1698
1699 ***SET USR VECTOR TO OBEABH.
1700 POKE 30862,171:POKE 30863,190
1798

```

```

1799 '***SET ADDR. FOR MSB OF DESTINATION IN M/L FOR PAGING.
1800 MD%=-16719                                     : '***MSB OF DEST. PG. 0BEB1H.
1898 '
1899 '***PAUSE AND PUT UP MESSAGE.
1900 GOSUB 3020:PRINT"A COUPLE OF OPTIONS EXIST HERE."
1910 PRINT:PRINT" <1> CONTINUE WITH 2K BY 24 PIC FILES."
1920 PRINT:PRINT" <2> DO 16K BY 3 MEM BANK LOAD.":PRINT
1930 PRINT"ENTER 1 OR 2":INPUT A$:POKE 30791,ASC(A$)
1940 IF A$="1" THEN GOTO 1960
1950 IF A$="2" THEN GOTO 2400 ELSE GOTO 1900
1960 GOSUB 3020
1970 PRINT"      ***INSERT PICTURE DISK***"
1980 SOUND8,5;0,3;8,5;0,3;8,5:GOSUB 3000
1998 '
1999 '***DATA FOR 24 SCREEN FILES.
2000 '***MEMORY BLOCK 1.
2010 DATA 1.1.EFGH,1.3.EFGH,1.2.EFGH,1.4.EFGH
2020 DATA 1.5.EFGH,1.6.EFGH,1.7.EFGH,1.8.EFGH
2030 '***MEMORY BLOCK 2.
2040 DATA 2.1.EFGH,2.3.EFGH,2.2.EFGH,2.4.EFGH
2050 DATA 2.5.EFGH,2.6.EFGH,2.7.EFGH,2.8.EFGH
2060 '***MEMORY BLOCK 3.
2070 DATA 3.1.EFGH,3.3.EFGH,3.2.EFGH,3.4.EFGH
2080 DATA 3.5.EFGH,3.6.EFGH,3.7.EFGH,3.8.EFGH
2098 '
2099 '***MAIN READ-IN ROUTINE.
2100 AD%=31825:MODE(1)
2110 FOR I%=1 TO 3                                     : '***MEM. BLOCKS 1 TO 3
2120     OUT 127,I%                                     : '***SET MEMORY BANK.
2130     FOR J%=192 TO 255 STEP 8                       : '***MSB 0C0H,0F8H,8H(8 SCRNS)
2140         POKE MD%,J%                               : '***SET MSB OF PAGE IN M/L.
2150         F$=""                                       : '***ASSISTS STRING HANDLING.
2160         READ F$:L%=LEN(F$):IF L%>8 THEN F$=LEFT$(F$,8):L%=8
2170         IF L%<>8 THEN F$=LEFT$("      ",(8-L%))+F$
2180         FOR K%=1 TO 8                               : '***POKE IN FILENAME.
2190             POKE AD%-1+K%,ASC(MID$(F$,K%,1))
2200         NEXT K%
2210         GOTO 1000                                   : '***LOAD FILE FROM DISK.
2220         K%=USR(0)                                   : '***MOVE SCREEN TO HI-MEM.
2230     NEXT J%
2240 NEXT I%
2298 '
2299 '***DISPLAY END MESSAGE.
2300 MODE(0):GOSUB 3020                                : '***RETURN TO TEXT MODE.
2320 PRINT@64,"ALL SCREENS HAVE BEEN SAVED TO THE MEMORY ";
2330 PRINT"EXPANSION."
2340 PRINT"REINSERT THE <PROGRAM DISK> TO CONTINUE DISPLAY"
2350 SOUND 8,5;0,3;8,5;0,3;8,5
2360 PRINT@320,"IF <MEMORY BANK SAVE> WANTED-"
2370 PRINT"THEN CONTINUE":GOSUB 3000
2398 '
2399 '***RUN THROW-UP DISPLAY PROGRAM.
2400 PRINT:PRINT"LOADING THROW-UP"
2410 RUN"THROWUP"
2997 STOP
2998 '
2999 '***SURROUTINE FOR NEW SCREEN.
3000 PRINT@480,"*****";
3010 A$=INKEY$:A$=INKEY$:IF A$="" THEN GOTO 3010
3020 CLS:PRINT@13,"*****":PRINT:PRINT:RETURN
9998 '
9999 '***UPDATE DISK FILE.
10000 ERA"LOADUP":SAVE"LOADUP":END

```



THE CIRCUIT IS THE SAME AS USED FOR THE VZ200 PROJECT COUPLE ISSUES BACK. AS THE VZ300 HASN'T A RAM BOARD TO MODIFY ANOTHER SOLUTION HAD TO BE FOUND AND IT'S EASIER THAN THE VZ200 PROJECT. THE DECODING ON THE 138 DECODER WAS DESIGNED TO GIVE ONLY ONE OUTPUT, Q0 - A32768-A65535 (8000H-FFFFH).

IF YOU COMPARE THE PINOUTS OF THE VZ300 16K BASIC ROM AND THE 32K RAM CHIP YOU'LL NOTE THAT ONLY THREE PINS DIFFER. THEY ARE PIN 1-A14, PIN 20-CS BAR AND PIN 27-WR BAR. SO IT SEEMS ONLY LOGICAL THAT WE PIGGYBACK THE 32K RAM CHIP ON IT VIA A SOCKET WHICH IS A NEAT ARRANGEMENT AND THEREFORE NO PCB IS REQUIRED.

A SMALL PIECE OF VEROBOARD IS USED TO MOUNT THE 74LS138 CHIP AND AS YOU'LL NOTE BY THE DIAGRAM NOT HARD TO ASSEMBLE AT ALL. ALSO NOTE THE ORIENTATION OF THE 16K ROM, 32K RAM AND 74LS138 CHIP. THE TWO ARROWS ON THE VZ300 PCB LAYOUT INDICATE POSITIONS OF THE 16K ROM AND MEMORY EXPANSION CONNECTOR. THE PINOUT OF THE MEMORY EXPANSION CONNECTOR IS ALSO SHOWN TO MAKE CONSTRUCTION EASIER.

START BY PREPARING YOUR PIECE OF VEROBOARD BY CUTTING IT TO SIZE AND USING AN 1/8" DRILL BIT BY HAND CUT THE COPPER TRACKS AS INDICATED. SOLDER THE THREE LINK WIRES ON FIRST AND THE 16 PIN SOCKET ON NEXT MAKING SURE OF ORIENTATION. NOTE - WHEN CONNECTING MREQ-BAR WIRE TO TRACK FOUR ON VEROBOARD BEND IT OVER UNDERNEATH SO IT TOUCHES TRACK FIVE AS WELL AND SOLDER WHICH SAVES A LINK WIRE.

OPEN UP YOUR VZ, REMOVE PCB FROM CASE AND UNSOLDER RF SHIELD. GET 28 PIN SOCKET AND BEND PINS 1, 20 AND 27 AT RIGHT ANGLES AND SOLDER A LENGTH OF WIRE TO EACH. PLACE SOCKET ON 16K ROM AND SOLDER REMAINDER OF PINS TO ROM BEING CAREFUL OF SOLDER BRIDGES. MAKE SURE SOCKET PIN # 1 MATCHES PIN # 1 ON THE ROM.

CONNECT FOUR WIRES FROM THE VEROBOARD TO THE BACK OF THE EDGE CONNECTOR FINGERS AND SOLDER THE CS BAR WIRE FROM THE SOCKET TO VEROBOARD NEXT. THE TWO REMAINING WIRES ON THE SOCKET GO TO THE EDGE CONNECTOR. INSPECT YOUR WORK FOR BRIDGES OR ERRORS AND WHEN SATISFIED PLUG IN 32K RAM AND 74LS138 CHIPS INTO THEIR SOCKETS. WRAP VEROBOARD ASSEMBLY IN ELECTRICAL TAPE OR ENCLOSE IT IN CARDBOARD SLEEVE TO PREVENT SHORTS.

POWER UP YOUR VZ AND IF THE NORMAL READY MESSAGE APPEARS TYPE IN THE FOLLOWING LINE AND PRESS RETURN.

PRINT PEEK(30897)+256\*PEEK(30898)

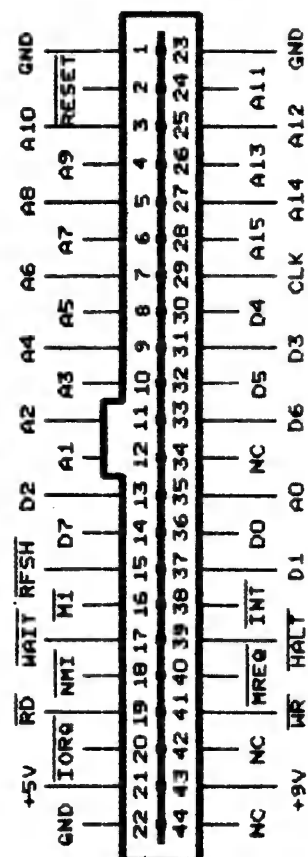
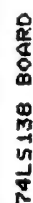
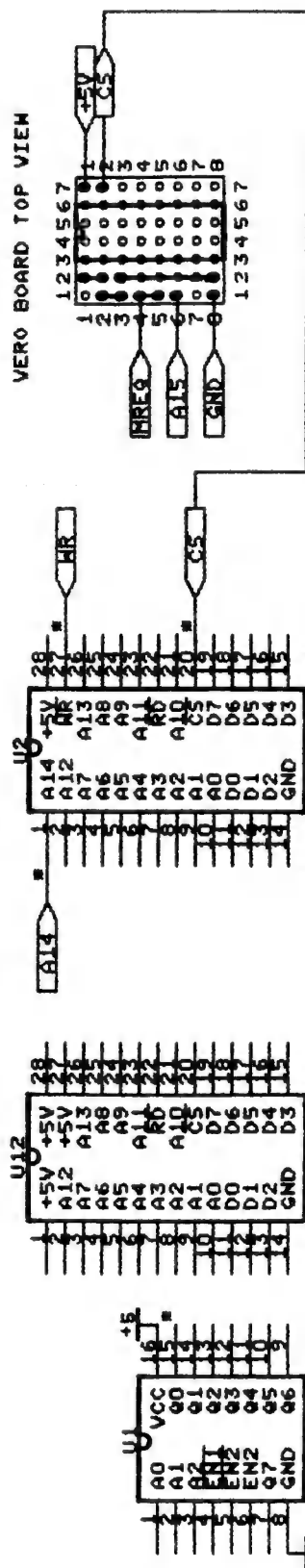
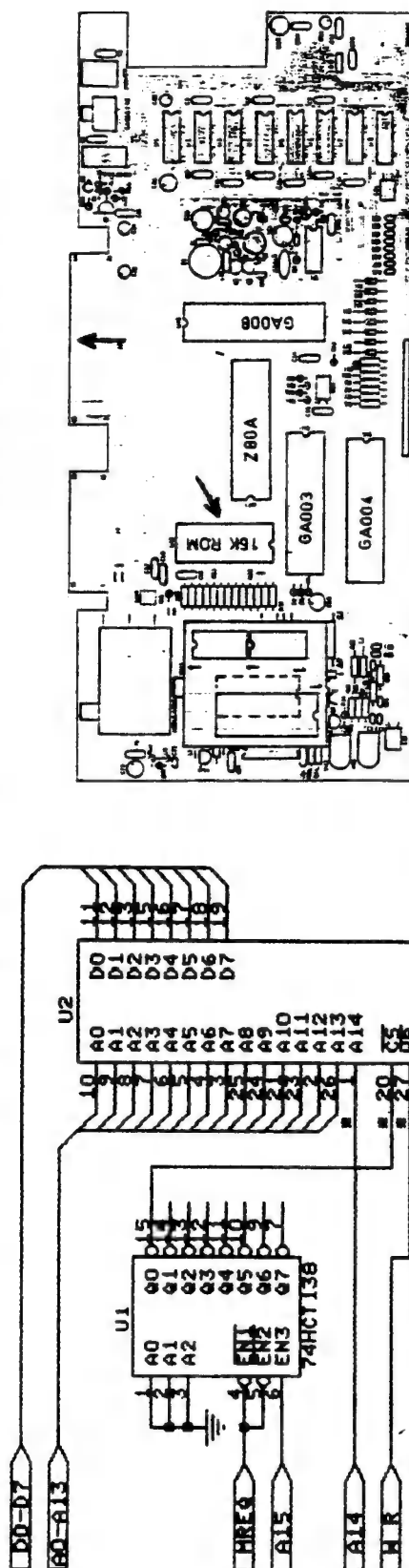
IF THE ANSWER IS 65535 WITH NO DISK DRIVE OR EXTERNAL MEMORY PLUGGED IN THEN IT MEANS YOUR INTERNAL MEMORY EXPANSION WAS SUCCESSFUL AND YOU NO LONGER NEED EXTERNAL MEMORY CARTRIDGES WITH THEIR SLOPPY EDGE CONNECTORS.

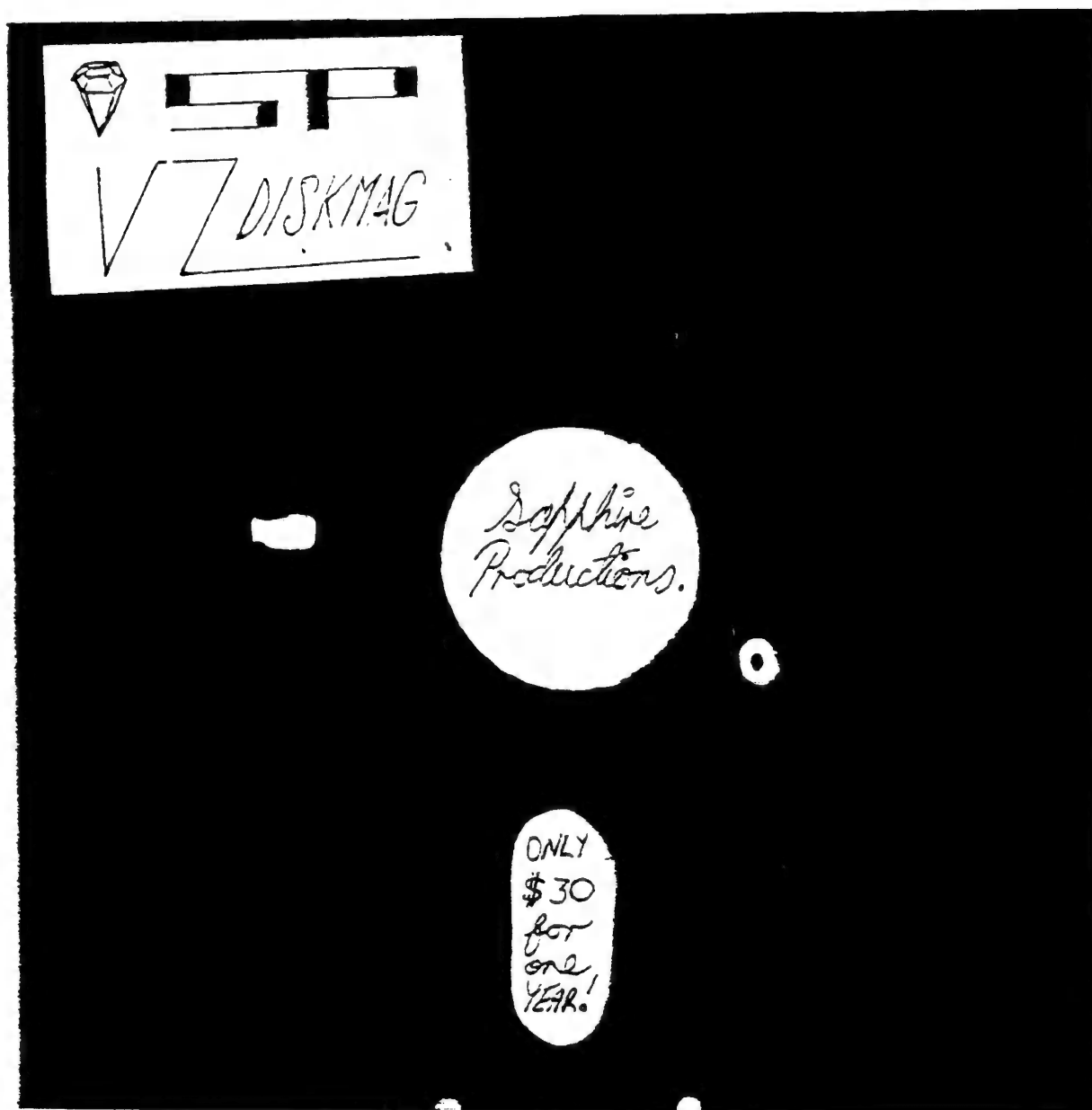
ALL THAT REMAINS NOW IS TO REASSEMBLE AND THE RF SHIELD COULD BE LEFT OFF UNLESS YOU HAVE NOTICEABLE INTERFERENCE. PERSONALLY NONE OF MY VZ GEAR HAS ANY RF SHIELDING AND HAS OPERATED WITH NO PROBLEMS FOR A COUPLE YEARS NOW.

PARTS LIST: 1 X 62256 IC - 1 X 74LS138 IC  
1 X 16 PIN AND 1 X 28 PIN IC SOCKETS  
1 SMALL PIECE VEROBOARD & SOME HOOK UP WIRE

VZ 300 INTERNAL 32K MEMORY EXPANSION BY JOE LEON (1989-90)

## VZ300 PCB COMPONENT LAYOUT





NEWS      GAMES      MUSIC

*Assembly for Beginners*

COMPETITIONS      REVIEWS

Write to: Jason Oakley, PO Box 600, TAREE, N.S.W. 2430.

```
*****
*
*   LOOK !!!! --- PROGRAMS FOR SALE --- ALL NEW !!!!
*
*****
```

<1> V Z D I S A S S E M B L E R  
#####

WHAT, ANOTHER DISASSEMBLER? BUT, YOU HAVE ALREADY GOT ONE?  
THIS ONE IS DIFFERENT!

THIS PROGRAM IS ENTIRELY WRITTEN IN MACHINE CODE. IT ACTUALLY RUNS ABOUT 40 TIMES FASTER THAN D.S.E.'S DISASSEMBLER (OR ANY ONE ELSE'S). IT WILL DISASSEMBLE ANY PROGRAM THAT YOU CAN BLOAD INTO MEMORY. IT WORKS WITH ANY VZ CONFIGURATION. IT DISASSEMBLES EVEN THE 88 EXTRA Z80 OPCODES THAT ZILOG DOESN'T ADMIT TO.

PRICE? ONLY \$25.00 - TAPE AND DISK VERSIONS AVAILABLE.

PRICE INCLUDES HARDCOPY MANUAL. INTERESTED? YOU MAY PURCHASE THIS PROGRAM FROM PETER HICKMAN, FOR ADDRESS SEE BELOW.

```
*****
*
*   BRAND NEW - VZ SERIAL INTERFACE PROGRAM - BRAND NEW
*
*****
```

<2> V Z M O D E M S O F T W A R E  
#####

DID YOU WANT TO TALK TO OTHER COMPUTERS VIA A MODEM? DID YOU BUY THE DSE TERMINAL EPROM, ONLY TO DISCOVER THAT IT ONLY WORKS WITH TAPE. IT ONLY ALLOWS YOU TO PRINT FILES, NOT SAVE THEM OR SEND THEM!

YOUR PROBLEMS ARE SOLVED! THE HICKMAN BROTHERS, PETER AND ANDREW, HAVE A BRAND NEW PROJECT WHICH WILL ALLOW YOU TO SEND, RECEIVE & SAVE FILES VIA A MODEM. IT WORKS WITH DISK!

SALE PRICE \$25.00 ONLY

INCLUDED ARE INSTRUCTIONS FOR THE HARDWARE MODIFICATIONS.

A SMALL MODIFICATION IS NEEDED TO YOUR DISK CONTROLLER. YOUR USER GROUP MAY HELP YOU MODIFY YOUR COMPUTER TO USE THIS EXCITING NEW SOFTWARE! IF YOU HAVE THE FUNCTION KEYS MOD AS WELL, THEN YOU WILL BE ABLE TO SEND EXTRA ASCII CHARACTERS SUCH AS:-

{ } ~ \_

THE MANUAL IS SUPPLIED ON DISK FOR YOU TO PRINT OUT WITH YOUR DISK VERSION OF E & F WORDPROCESSOR. IF YOU DO NOT OWN AN E & F WORDPROCESSOR PROGRAM, PLEASE ENCLOSE ANOTHER \$5.00 (TOTAL \$30.00) FOR PHOTOCOPYING AND POSTAGE OF THE MANUAL.

FOR PURCHASE OR MORE INFORMATION CONTACT:-  
PETER HICKMAN P.O. Box 8, WERRINGTON N.S.W. 2760.

## 28/19 -VZ USER GROUPS/PUBLICATIONS

### CONTRIBUTIONS TO THE HUNTER VALLEY VZ JOURNAL :-

IF YOU ARE THINKING OF CONTRIBUTING TO THE JOURNAL THE PREFERRED FORMAT IS BASIC LISTINGS, WORD PROCESSOR OR SOURCE CODE FILES ON TAPE OR DISK. FILES FROM THE FOLLOWING WORD PROCESSORS CAN BE ACCEPTED :-

E & F TAPE OR DISK PATCH 3.1-3.3, WORDPRO CARTRIDGE, WORDPRO PATCH AND ALL QUICKWRITE WORD PROCESSOR FILES.

### WANTED TO BUY -----

64K RAM PACKS - CONTACT JOE LEON  
22 DRURY STREET WALLSEND NSW 2287 --- PHONE (049) 51 2756

### CLUB MEETINGS -- ALL WELCOME --

FIRST FRIDAY OF MONTH - NO MEETING IN JANUARY 1990

VENUE - JESMOND NEIGHBOURHOOD CENTRE MORDUE PARADE JESMOND  
( REAR STOCKLAND MALL - BIG W )

JUNE 1 - ANNUAL GL AL MEETING - COMMITTEE ELECTIONS  
MACHINE CODE & ASSEMBLY CONTINUED (MONTHLY)  
COMPUTER SHOW UPDATE & IDEAS (MONTHLY)  
HARDWARE MODS DEMONSTRATION (BRING ALONG YOUR PROJECT)

### FUTURE DEMONSTRATIONS -

EPROM PROGRAMMER & ERASER, AUCTION NIGHT - USING THE VZ, RITTY, ETC.  
IF YOU HAVE ANY IDEAS FOR A DEMONSTRATION OR A SUBJECT THEN PLEASE LET YOUR COMMITTEE KNOW.

### CLUB COMMITTEE & SUBSCRIPTIONS -

PRESIDENT ----- ROSS WOODS --- (049) 71 2843  
SECRETARY/EDITOR -- JOE LEON ----- (049) 51 2756  
TREASURER ----- GARY BULLEY -- (049) 54 7561  
COMMITTEE MEMBERS - COLIN BRIDGE - PETER JONES

SUBSCRIPTION TO - AUST. - 6 MONTHS \$11.00 - 12 MONTHS \$21.00  
H.V.VZ.JOURNAL - N. Z. - 6 MONTHS \$13.00 - 12 MONTHS \$26.00

HUNTER VALLEY VZ USERS' GROUP - PO BOX 161 JESMOND 2299  
NEW SOUTH WALES AUSTRALIA

### VZ USER GROUPS & PUBLICATIONS --

VZ DOWN UNDER - VZ MAGAZINE - 6 ISSUES - \$18.00 PER YEAR  
HARRY HUGGINS 12 THOMAS STREET MITCHAM VICTORIA 3132

-----  
WAVZ - WESTERN AUSTRALIA VZ USER GROUP  
GRAEME BYWATER P O BOX 388 MORLEY W A 6062  
-----

BRISBANE VZ USERS WORKSHOP - C/O 63 TINGALPA ST. WYNUM WEST 4178  
SOFTWARE FOR SALE - DISK MENU  
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NOTE :- WHEN WRITING TO ANY ABOVE OR H.V.VZ. USERS' GROUP FOR INFORMATION PLEASE ENCLOSE A S.S.A.E. OR NZ 2 INT. REPLY COUPONS.

PATCH 3.3 WRITTEN BY DAVE MITCHELL WILL CONVERT YOUR E & F TAPE WORD PROCESSOR FOR FULL DISK USE WHILE RETAINING ALL ORIGINAL FUNCTIONS. BELOW ARE ADDED DISK COMMANDS & FUNCTIONS :-

LOAD, SAVE, ERASE, RENAME, DIRECTORY, INITIALIZE, UPDATE, DRIVE 1 & 2, SHIFTLOCK & IMBEDDED PRINTER CONTROL CODES PLUS CTRL+P WHICH BYPASSES PRINT MENU AND PRINTS TO SCREEN OR PRINTER. A ROUTINE IS ALSO PROVIDED TO CONVERT YOUR BASIC PROGRAM OR SOURCE CODE FILES INTO WORD PROCESSOR FILES.

PATCH 3.3 HAS PROVISION FOR IMBEDDING PRINTER CONTROL CODES IN TEXT AND FAST SAVING AND LOADING OF TEXT DATA TO AND FROM DISK USING BLOCK SAVE/LOAD TECHNIQUES. PRINTER CONTROL CODES CAN BE SAVED TO TAPE OR DISK.

BSTWP.F - THIS UTILITY PROVIDED WITH PATCH 3.3 WILL CONVERT BASIC PROGRAMS AND ED/ASS. SOURCE CODE FILES INTO WORD PROCESSOR FILES.

SYSTEM REQUIREMENTS - VZ 300 + 16K RAM PACK - VZ 200 + 26K

PATCH 3.3 IS COPYRIGHT TO AND ONLY AVAILABLE FROM :-  
HUNTER VALLEY VZ USERS' GROUP P.O.BOX 161 JESMOND 2299  
N.S.W. AUSTRALIA - PHONE JOE LEON (049) 51 2756

PRICE - AUS/NZ AU\$20.00 - UPDATE - AUS-\$10.00 - NZ-AU\$11.00.  
UPDATING AVAILABLE ONLY TO PREVIOUS PURCHASERS OF PATCHES.

FOR MORE INFORMATION WRITE TO H.V.VZ.U.G. ENCLOSING A SSAE.

## EXTENDED DOS V1.3 - \$15.00

UPDATED VERSION WITH EXTRA COMMANDS ADDED :-

OLD COMMANDS - MERGE, DIRA, LDIRA, DIRB, LDIRB, OLD, OLD., DEC, HEX, STATUSA AND LSTATUSA. STATUSA AND LSTATUSA ALSO WORKS WITH VERSION 1.0 DOS.

NEW COMMANDS :-

MENU - LOADS AND RUNS BINARY OR TEXT MENU PROGRAM FROM DISK.  
CODE - SIMPLIFIES USING PRINTER CONTROL CODES DIRECTLY OR FROM  
WITHIN A PROGRAM.  
LTAB - IS FOR SETTING OF LEFT MARGIN.  
MOVE - MOVES BASIC FILE FROM DISK TO CHOSEN MEMORY ADDRESS.  
UPD - ERASES OLD FILE AND SAVES WITH SAME FILE NAME.

## MENU/FILE COPIER - \$15.00

THIS UTILITY WILL READ YOUR DISK DIRECTORY AND PRESENT YOU WITH SEVERAL OPTIONS. USING THE CURSOR YOU CAN RUN/BRUN ANY PROGRAM OR SELECT FILE COPY, REN, ERASE, DRIVE 1 OR 2, ETC. BESIDES COPYING TEXT AND BINARY FILES ALL OTHER FILES CAN BE COPIED AS WELL EXEPT FOR DATA FILES.

FOR PURCHASE OR INFORMATION CONTACT DAVE MITCHELL - (079) 27 8519  
24 ELPHINSTONE St. NORTH ROCKHAMPTON QUEENSLAND 4701

FOR INFORMATION OR DEMONSTRATION IN NEWCASTLE AREA CONTACT :-  
JOE LEON - (049) 51 2756 - 22 DRURY STREET WALLSEND NSW 2287

